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ABSTRACT

The State of Alaska Department of Education has created a handbook for establishing budgets for the following three types of construction projects: new schools or additions; renovations; and combined new work and renovations. The handbook supports a demand cost model computer program that includes detailed renovation cost data, itemized by building systems, to allow for generating specific renovation costs from window replacements to complete interior tear out and remodeling. This handbook provides worksheet descriptions for each type of construction project detailed in the program. A grand summary worksheet is also included which provides a single page summary of the project identification and the estimated project costs. Data tables conclude the handbook which list statistics on geographic area cost factors, a size adjustment chart, an index of Alaskan construction escalation, and the categories for the type of space added or improved under the Department of Education Instruction CIP Application. (GR)

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# Program Demand Cost Model for Alaskan Schools

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**State of Alaska - Department of Education**
**Education Support Services / Facilities**

**8th Edition**
**1999**



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# Introduction

The Program Demand Cost Model for Alaskan Schools (Cost Model) was originally developed for the State of Alaska, Department of Education in 1981; and has been used over the years with some success. Through the 6th Edition, it was revised periodically to keep unit costs current. The 6th and 7th Editions underwent significant modification of the Renovation module by shifting to a building systems based model to provide users a more versatile estimating tool. The 8th Edition has expanded on these changes and now provides greater detail in the building systems being estimated.

The Cost Model is designed to address three types of construction projects: New Schools or Additions, Renovations, and Combined New Work and Renovations. Unlike previous versions, the 8th Edition of the Cost Model includes detailed renovation cost data. The renovation costs are itemized by building systems to allow the user to generate project specific renovation costs. This provides the renovation module the ability to address a wide variety of project scopes; from window replacements to complete interior tear out and remodel.

The revisions to the renovation module can generate good quality cost estimates but require that the user has an understanding of the building systems affected by the project and a rough idea of the quantity of work required to each building system. It is not as quick as summing the square footage of space to be renovated and applying a light, medium, or high renovation cost. However, properly applied it will generate a good quality, project specific cost estimate.

The Cost Model is to be used to establish a complete budget for a specific school construction project. The project construction budget can be utilized as a basis for legislative funding requests, local bond issues, or other forms of appropriation. It can be used to generate a conceptual estimate without going to the expense of producing architectural drawings or engineering reports or, as a means of assessing a consultant's estimate for its reasonableness.

It should be noted that the Cost Model is a tool to develop a construction project budget for projects with limited information or in the early stages of definition. It is not intended for projects beyond the conceptual design level or for projects where detailed estimates or contractor quotes are available. Prices and unit rates in the 8th Edition are based on October 1998 costs for materials, equipment, freight, and Title 36 labor rates.

# How to Use the Program Demand Cost Model

### Getting Started

The Cost Model is available from the Department of Education on 3-1/2" floppy disk or by download from the Department of Education's web site at http://www.educ.state.ak.us/. The floppy disk contains four Microsoft Excel template files:

- New School Demand Model.xlt (for New School or Addition projects)
- Renovation Demand Model.xlt (for Renovation projects)
- Combined New Work – Renovation Work Demand Model.xlt (for projects that combine New and Renovation work)
- Tables, 8th Edition 1999.xls (reference tables)

To use the model, open the appropriate file based on the project type that is to be estimated. Rename and save the file as an .xls workbook. Each Cost Model workbook is composed of a series of worksheets that address different project costs. Worksheets 1.00 through 9.00 are for New Construction or Addition work and comprise the New School Demand Model.xlt file. Worksheets 11.00 through 16.00 are for Renovation work and comprise the Renovation Demand Model.xlt file. For the purposes of these instructions, the Combined New Work – Renovation Work Demand Model.xlt file will be used as the example because it contains both the New School and the Renovation estimating worksheets.

### Worksheet – Grand Summary

The workbook should open to the *Grand Summary* worksheet. This worksheet provides a single page summary of the project identification and the estimated project costs. Please refer to the Samples section for an example of the *Grand Summary* worksheet. The cells with red text are to be used for entry of project specific information. The red text cells should be the only editable cells in the workbook. The tab key will move the cursor from editable cell to editable cell while skipping the locked cells. The cells containing estimated project costs are linked to other worksheets and no edits to these cells are required. Complete the project summary information, save the file, and proceed to the next worksheet. It is recommended that the file be saved at the completion of each worksheet.

# New School or Addition Projects

**Worksheet - 1.00**

The next worksheet is titled 1.00. This worksheet contains square foot of floor area unit costs for various types of *Instructional Resource/Support Teaching Areas.* These space categories are similar to those in Appendix F of the CIP Application. Enter the square feet of floor area that is required in each of the space types. The *Other* space categories are available for required instructional spaces that are not specifically listed. Enter a descriptive title for the *Other* space on the worksheet by overwriting the red text cell entitled *Other*. Please provide additional information regarding the physical characteristics of the space and the basis for the estimated cost on the *Notes-Assumptions* worksheet.

**Worksheet - 2.00**

The next worksheet is titled 2.00. This worksheet contains square foot of floor area unit costs for various types of *General Support/Supplementary Areas.* These space categories are similar to those in Appendix F of the CIP Application. Enter the square feet of floor area that is required in each of the space types. The *Other* space categories are available for required general support spaces that are not listed. Enter a descriptive title for the *Other* space on the worksheet by overwriting the red text cell entitled *Other*. Please provide additional information regarding the physical characteristics of the space and the basis for the estimated cost on the *Notes-Assumptions* worksheet.

**Worksheet - 3.00**

The next worksheet is titled 3.00. This worksheet contains unit costs for some *Optional Special Requirements* that are often included in the construction of a new school or addition. Please note that the unit costs are no longer based entirely on square feet of floor area so the units entered in the red text cells must coincide with units used in pricing a particular item. Below is a brief summary of the work items included on worksheet 3.00:

3.01 125 KW Electrical Generator and Day Tank – enter the number of 125KW generators required by the project. A 125KW generator can provide adequate emergency power for schools up to 60,000 square feet.

3.02 Fuel Oil 1,000 Gallon Storage for Generator– enter the gallon capacity of fuel of the generator's storage tank (this tank is in addition to the day tank). If

fuel storage of greater than 2000 gallons is required, input the quantity in line 4.06 "Bulk Fuel Storage" on the next worksheet.

3.03 Sprinkler System – enter the square feet of building area that is to receive a wet pipe sprinkler system. Please note that this cost is only for new construction, renovation sprinkler installation will be addressed in category 11.78. Also note that some building types may require sprinklers in attic spaces and large exterior canopy areas, so it is not uncommon for the square feet of sprinkled area to exceed the square feet of building area. Please place an adder in category 3.06 for a dry pipe sprinkler system. A consultant may be required to determine the additive cost of a dry pipe over a wet pipe sprinkler system.

3.04 Fire Protection – enter the number of pumps required to provide adequate pressure for the fire sprinkler system. Most schools in urban areas will have water supplied at an adequate pressure for the fire sprinkler system. Many rural schools will need pumps to provide adequate pressure for the fire sprinkler system, especially schools that require water storage tanks for the fire sprinkler system.

3.05 Water Storage or Special Supply Requirements – enter the gallon capacity of water storage tanks required to provide sufficient water to supply the fire sprinkler system. Technical assistance may be required to accurately calculate the water storage tank size requirements.

3.06 Other Special Requirements – enter a lumpsum amount for *Other Special Requirements*. The lumpsum cost should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 6.00 will convert the lumpsum cost to an appropriate regional cost. Please provide additional information regarding the other work on the *Notes-Assumptions* worksheet. Technical assistance may be required to accurately calculate cost of *Other Special Requirements*.

**Worksheet - 4.00**

The next worksheet is titled 4.00. This worksheet contains some unit costs for *Sitework*, however most of the categories on this worksheet are lumpsum entries. This requires the input of a dollar amount rather than a quantity and will probably require technical assistance to accurately complete. Please note that all lumpsum costs should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 6.00 will convert the lumpsum costs to an appropriate regional cost. Below is a brief summary of the work items included on worksheet 4.00:

## New School or Addition Projects

4.01 Demolition of Existing Building – enter the square feet of floor area of buildings that are to be demolished. Please note that this cost is for demolition and removal of entire structures. Selective demolition and hazardous material abatement are not covered in this unit cost.

4.02 Site Preparation – enter the lumpsum dollar amount required to prepare the site. Work such as clearing, grading, dewatering, excavation, and fill is to be included in this category.

4.03 Site Improvement – enter the lumpsum dollar amount required for site improvements. Work such as paving, landscaping, planting, fencing, and installation of other site accessories is to be included in this category.

4.04 Playground Equipment/Sports Equipment – enter the lumpsum dollar amount required for *Playground and Sports Equipment*. Work that is part of, or occurs in conjunction with, the installation of playground and sports equipment is to be included in this category.

4.05 Utilities – enter the lumpsum dollar amount required for the installation of site *Utilities*. Installation of site utilities such as water service, sanitary sewer, electrical service, communications connection, and storm drainage is to be included in this category.

4.06 Bulk Fuel Storage – enter the gallon capacity of the new *Bulk Fuel Storage* facility. This cost is for construction of a complete new above ground fuel storage and distribution system with a storage capacity exceeding 2000 gallons. The Cost Model unit cost for this category varies automatically based on the storage capacity. Projects that require replacement of an existing above ground bulk fuel storage system should use category 12.10 *Replace Bulk Fuel System (Above Ground)* in lieu of category 4.06. Projects that require replacement of an existing below ground bulk fuel storage system should use category 12.09 *Replace Bulk Fuel System (Below Ground)* in lieu of category 4.06. Category 12.11 *Soil Remediation* should be used in conjunction with categories 12.09 and 12.10 if contaminated soil exists at existing fuel storage areas.

4.07 Site Lighting – enter the lumpsum dollar amount required for *Site Lighting* and other site electrical fixtures such as block heaters. Cost associated with electrical supply to the building, such as electrical service and transformer, should be entered in category 4.05 *Site Utilities*. Generally, category 4.07 *Site Lighting* is to include the cost of running conduit and wire from the facility's panels to various electrical fixtures on the site, and the cost of furnishing and installing those fixtures.

4.08 Special Circumstances Additional Costs – enter the lumpsum dollar amount for special site circumstances. The need for foundation pilings is not a special site circumstance in itself, however the additional cost of thermopiles over standard piling, where required, is a special circumstance. Other examples of special site circumstances are construction of sea walls, off-site roads, flood controls, et cetera. Basically, a special site circumstance is sitework that responds to specific site feature and is atypical for school or regional construction. Please provide additional information regarding any special site circumstances on the *Notes-Assumptions* worksheet.

**Worksheet - 5.00**

The next worksheet is titled 5.00. This worksheet calculates the overhead and profit charges for a general contractor's services. This cost is set at 15% of the direct construction cost, which is standard throughout the construction industry. No entries are required on this worksheet.

**Worksheet - 6.00**

The next worksheet is titled 6.00. This worksheet calculates the additional cost for construction based on the project location. The unit costs in the Cost Model are all based on the cost of material and labor in Anchorage. Therefore, to accurately reflect construction costs in other regions of the state, a geographic factor is applied to the construction costs to adjust them to reflect the actual cost of construction in the project's locale. This factor is intended to cover expenses such as shipping, subsistence, travel, et cetera.

The regional geographic factors can be found in *Table No. 1 Geographic Area Cost Factor*. Table No. 1 has been expanded so that now the geographic factors are listed alphabetically by school district, with some districts having multiple factors. There are two values to the right of the district name: the Index and the Percentage. Insert the appropriate percentage for the school district into the red text cell for category 6.01. The spreadsheet will automatically calculate the reduced or additional construction cost due to the geographic location of the project.

**Worksheet - 7.00**

The next worksheet is titled 7.00. This worksheet calculates the premium that a project will cost based on the *Size* of the project. Projects smaller than 25,000 square feet can anticipate paying a bit more per square foot because some of a contractor's general requirement costs are fixed. The additional cost required due to the size of the project is calculated automatically on this worksheet. No entries are required on this worksheet.

**Worksheet - 8.00**

The next worksheet is titled 8.00. This worksheet calculates the necessary *Contingencies* for the project. Two contingencies are addressed: a general design contingency and an escalation contingency.

The general design contingency is to accommodate unknowns due to the conceptual level of the design. The general design contingency is fixed at 10% of the subtotal of costs calculated on worksheets 1.00 through 7.00. No entries are required to determine the general design contingency.

The escalation contingency is to account for the increase in construction costs from October 1998 to the year that the project is anticipated to be constructed. The escalation rate is automatically calculated based on the anticipated construction date entry that is to be entered in the red text cell for category 8.03.

**Worksheet - 9.00**

The next worksheet is titled 9.00. This worksheet calculates *Other Project Costs* that are associated with the construction of a new school or addition. This worksheet also provides the total project cost. Below is a brief summary of the costs included on worksheet 9.00:

9.01 Construction Management – enter the percent of construction cost required for *Construction Management*. Qualified district and municipal personnel can manage the construction project or a private contractor can be hired or both. The Department of Education's suggested range for the cost of in-house construction management is 2 – 5% of the construction cost. The construction management cost shall not exceed a total of 5% of the construction cost if both in-house personnel and private contractors are utilized. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

Also note that AS 14.11.020 (c) places limits on the cost of construction management furnished by a private contractor:

AS 14.11.020

"(c) The construction management costs of a project assumed under this section may not exceed four percent of the amount of appropriations for the facility if the amount of appropriations is $500,000 or less. The construction management costs of a project assumed under this section may not exceed three percent of the amount of appropriations for the facility if the amount of appropriations is over $500,000 but less than $5,000,000. The construction management costs of a project assumed under this section may not exceed two percent of the amount of appropriations for the facility if the amount of appropriations is $5,000,000 or more. For purposes of this subsection "construction management" means management of the project's schedule, quality, and budget during any phase of the planning, design, and construction of the facility by a private contractor engaged by the municipality or regional educational attendance area."

9.02 Indirect Costs (Administration) – enter the percent of construction cost required for *Indirect Costs (Administration).* Indirect costs include, but are not limited to: the school district's cost of facilitating the entire project, accounting costs, and Department of Education overhead costs. Typically, large projects require smaller indirect cost percentages. The Department of Education's suggested range for the cost of project administration is 2 – 5% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

9.03 Design Costs – enter the percent of construction cost required for *Design Costs.* Design costs include but are not limited to the cost associated with the project planning (from educational specifications through design development), preparation of construction/bid documents, and overseeing the completion of the work. Typically, large projects require smaller design cost percentages. The Department of Education's suggested range for the cost of project design is 6 – 8% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

9.05 Project Contingency for Changes – calculates the *Project Contingency for Changes* for the entire project. The project contingency is fixed at 5% of the subtotal shown in category 9.04, so no entries are required to generate the cost. This contingency is to cover the possibility of above average design,
management, or administration costs as well as construction cost overruns. The project contingency is in addition to the 10% general design contingency that was applied in worksheet 8.00.

9.07 Land Purchase Costs – enter the lumpsum amount for *Land Purchase Costs*. Even if the site has already been purchased it is wise to include the acquisition cost, especially if state reimbursement or funding is to be sought. Please note that 4 AAC 31.025 defines the requirements for reimbursement of site acquisition costs. Information regarding school site selection is available in the Department of Education publication Site Selection Criteria and Evaluation Handbook.

9.08 Site Investigation (Estimate) – enter the lumpsum amount for *Site Investigation*. Site investigation costs include but are not limited to cost associated with selecting a site, site surveys and soils engineering services.

9.09 Furnishings & Equipment Costs – enter the percent of construction cost required for *Furnishings & Equipment Costs*. Please refer to the Department of Education publication, Guidelines for School Equipment Purchases for information regarding the definition of equipment. Budget parameters for equipment costs on a per student basis are also established in the publication. The Department of Education's suggested range for the cost of furnishings and equipment is 0 – 7% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

9.10 Technology (Estimate) – enter the lumpsum amount required for *Technology*. Please refer to the Department of Education publication, Guidelines for School Equipment Purchases, for information regarding the definition of technology. Budget parameters for technology costs on a per student basis are also established in the publication. If technology costs are expected to exceed the cost parameters identified in the publication, please provide an itemized estimate of the technology costs and justification for the increase based on the instructional program to be delivered.

9.11 Art (Where Applicable) – enter the percent of construction cost required for *Art*. The Department of Education applies the provisions of AS 35.27.020 to establish the required percent for art in school projects. This requirement is being applied by the department to all School Construction projects and some Major Maintenance projects based on the scope of the project. The minimum requirement for rural school facilities is 1/2% of construction cost. The minimum requirement for all other school facilities is 1% of construction cost.

9.12 Project Total Cost – provides the estimated *Project Total Cost* for new construction or addition work.

## New School or Addition Projects

Worksheets 1.00 – 9.00 comprise the New School or Addition module of the Program Demand Cost Model for Alaskan Schools – 8th Edition. Please refer to the Samples section for an examples of the *Grand Summary*, *General Summary*, and *Notes –Assumptions* worksheets.

# Renovation Projects

**Worksheet - 11.00**

The next worksheet is titled 11.00. This worksheet is the heart of the Renovation Cost Model. Unit costs are provided by work assembly. A work assembly can be thought of as a summary of a group of tasks required to complete that item. A building system is composed of a series of work assemblies. An example of a building system would be 11.20 *Exterior Closure*. An example of a work assembly is the replacement of an exterior door. Below are the tasks that contribute to the unit cost to replace an exterior door:

- Remove interior and exterior door trim
- Remove door and door frame
- Dispose of demolition debris
- Install new door frame and hang door
- Install new door hardware
- Install new interior and exterior door trim
- Install new caulking at door opening
- Paint door, door frame, door.trim

The use of work assemblies provides users with the flexibility to customize a renovation estimate to the repairs required at a specific facility. Not every conceivable building system replacement is covered here, just the most common building systems found in existing Alaskan schools. If the proposed project incorporates a special building system that is not included in worksheet 11.00, a consultant knowledgeable in the special system will be required to prepare an accurate cost estimate. Please note that hazardous material abatement is not included in worksheet 11.00 unit costs. Costs for removal of hazardous materials are covered on worksheet 12.00 and should be selected as necessary. Below is a brief summary of the unit costs included on worksheet 11.00:

11.02 Foundation and Substructure Repairs – enter the lumpsum amount required for *Foundation and Substructure Repairs*. If the facility requires foundation or substructure repairs, technical assistance from a consultant with foundation repair experience will be required to accurately estimate the extent of repairs required and their cost. Please provide additional information describing the required repairs and the basis for the estimated cost on the *Notes-Assumptions* worksheet.

11.11 Superstructure Repairs– enter the lumpsum amount required for *Superstructure Repairs*. If the facility requires superstructure repairs, technical assistance from a consultant with structural repair experience will be required to accurately estimate the extent of repairs required and their cost. Please provide

additional information describing the required repairs and the basis for the estimated cost on the *Notes-Assumptions* worksheet.

For all 11.2X, 11.3X and some other individual items, enter the square footage of the amount of the system to be replaced. Do NOT use the total square footage of the building.

11.21 Exterior Upgrades – enter the square feet of beveled siding to be replaced. This unit cost includes: removal and disposal of existing siding, installation of new Tyvek and beveled cedar siding, installation of new exterior trim and flashing, new caulking at openings, new paint to siding and trim.

11.22 Exterior Upgrades – enter the square feet of exterior siding to be repainted. This unit cost includes: removal of old caulking, installation of new caulking, preparation of surfaces, new paint to doors, trim and exterior siding.

11.23 Exterior Insulation Finish System to Existing – enter the square feet of EIFS to be installed over the existing siding. This unit cost includes: surface preparation of existing siding, installation of 1" EIFS, new sealant and flashing. Please note that the cost to remove existing siding is excluded from 11.23's unit cost. If your project requires removal and disposal of existing siding enter the lumpsum cost in category 11.98 for the demolition work. Please provide a description of extra work on the *Notes-Assumptions* worksheet and remember that all lumpsum costs should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 14.00 will convert the lumpsum costs to an appropriate regional cost.

11.24 Exterior Upgrades – enter the square feet of painted cement board to be installed over the existing siding. This unit cost includes: surface preparation of existing siding, installation of cement board, new exterior trim, painting of exterior, new sealant, new Tyvek, and new flashing. Please note that cost to remove existing siding is excluded from 11.24's unit cost. If your project requires removal and disposal of existing siding enter the lumpsum cost in category 11.98 for the demolition work. Please provide a description of extra work on the *Notes-Assumptions* worksheet and remember that all lumpsum costs should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 14.00 will convert the lumpsum costs to an appropriate regional cost.

11.25 Exterior Skin – enter the square feet of metal siding to be installed over the existing siding. This unit cost includes: furring and ½" CDX plywood, installation of kynar finish metal siding system, new sealant, new Tyvek, and

new flashing. Please note that cost to remove existing siding is excluded from 11.25's unit cost. If the project requires removal and disposal of existing siding enter the lumpsum cost in category 11.98 for the demolition work. Please provide a description of extra work on the *Notes-Assumptions* worksheet and remember that all lumpsum costs should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 14.00 will convert the lumpsum costs to an appropriate regional cost.

11.26 Insulation– enter the square feet of insulation to be replaced in existing exterior wall. This unit cost includes: removal of GWB and insulation on exterior wall, disposal of debris, installation of new R-19 insulation, installation of new 10 mil vapor barrier, and installation of new GWB.

11.27 Exterior Closure – enter the number of door leafs to be replaced. This unit cost includes: removal of interior and exterior door trim, removal of door and frame, disposal of debris, installation of new door and frame, installation of new door hardware, new caulking, and painting of all new work.

11.28 Exterior Closure – enter the square feet of glazing to be replaced. This unit cost includes: removal of windows and blinds, disposal of windows and blinds, installation of new metal clad windows, installation of new interior and exterior trim, painting of trim, installation of new horizontal blinds.

11.31 Replace Metal Roofing – enter the square feet of metal roofing to be replaced. This unit cost includes: removal and disposal of existing roofing (excluding hazardous material abatement), minor repair of approximately 20% of roof deck, replacement of approximately 20% of insulation and vapor barrier, and installation of new metal roofing.

11.32 Replace Membrane Roof – enter the square feet of flat roof membrane to be replaced. This unit cost includes: removal and disposal of existing roofing, minor repair of approximately 20% of roof deck, installation of new vapor barrier, installation of new 6" rigid insulation, installation of new flashing, and installation of new EPDM roofing.

11.41 Replace Partitions – enter the square feet of new interior partitions. The quantity of new partitions is the sum of the square feet of framed wall, not the square feet of GWB. This unit cost includes: removal and disposal of existing partitions, framing of new 2x4 and 2x6 partitions, installation of new sound batt
insulation, installation of new GWB, installation of new base, installation of new wall finishes, and painting. Please note that this cost, while including a variety of common wall finishes, does not include ceramic tile. Please use category 11.47 for installation of ceramic wall tile.

11.42 Replace Doors and Frames – enter the number of door leafs to be replaced. This unit cost includes: removal of door and frame, disposal of debris, installation of new door and frame, installation of new door hardware, and painting of all new work.

11.43 Interior Painting – enter the square feet of walls and ceiling to be painted. This unit cost includes: removal and reinstallation of electrical device covers, painting of walls, painting of ceiling, and painting of doors.

11.44 Replace Carpeting – enter the square feet of new carpeting. This unit cost includes: removal and disposal of existing floor finish, installation of new carpet, and installation of new base.

11.45 Replace Resilient Flooring – enter the square feet of new resilient flooring (sheet vinyl and VCT). This unit cost includes: removal and disposal of existing floor finish, installation of new resilient flooring, and installation of new base.

11.46 Replace Gym Flooring – enter the square feet of new gym flooring. This unit cost includes: removal and disposal of existing floor finish, installation of new sports flooring, and installation of new base. Please note that the sports flooring is a membrane flooring and not a wood gym floor. If a wood gym floor is desired, enter the additional lumpsum cost for a wood gym floor in category 11.98. Please provide details regarding the additional cost on the *Notes-Assumptions* worksheet.

11.47 Replace Ceramic Tile – enter the square feet of new ceramic tile. This unit cost includes: removal and disposal of existing tile surfaces, installation of new mosaic floor tile, and installation of new wall tile with cementious backer.

11.48 Replace Acoustical Tile Ceiling – enter the square feet of suspended acoustic ceiling tile to be replaced. This unit cost includes: removal and reinstallation of light fixtures, removal of existing suspended acoustical ceiling system, and installation of new suspended acoustical ceiling system.

11.49 Replace Gypboard Ceiling – enter the square feet of new gypsum board ceiling. This unit cost includes: removal and reinstallation of light fixtures, removal of existing gypsum board ceiling, installation of new gypsum board ceiling, and painting of new ceiling.

11.51 Replace Toilet Partitions – enter the number of toilet partitions to be replaced. This unit cost includes: removal and disposal of existing toilet partitions, installation of new toilet partitions, and installation of new associated toilet accessories.

11.52 Replace Toilet Accessories – enter the number of toilet accessories (soap dispensers, waste receptacles, paper towel dispensers, etc.) to be replaced. This cost includes: removal and disposal of existing toilet accessories and installation of new toilet accessories.

11.53 Replace Sports Equipment and Lockers – enter the number of lots of sports equipment and lockers to be replaced. Each lot includes the following work: removal and disposal of existing equipment, installation of 50 new lockers, installation of two new wall mount basketball goals, installation of four new floor inserts, installation of two new chinning bars, and installation of two new climbing peg boards.

11.54 Replace Tack/Chalk/Marker Boards – enter the square feet of new marker, chalk, and tack board. This unit cost includes: removal and disposal of existing boards, and installation of new boards.

11.55 Replace Base Cabinet Units – enter the linear feet of new base cabinets. This unit cost includes: removal and disposal of existing cabinets, installation of new base cabinets, and installation of new plastic laminate countertops.

11.56 Replace Wall Hung Units – enter the linear feet of new wall hung cabinets. This unit cost includes: removal and disposal of existing cabinets, and installation of new wall cabinets.

11.61 Repairs/Replacement (Estimate) – enter a lumpsum amount for repair, replacement, or addition of a conveying system. In most cases this category will address the cost of work related elevators or lifts. Technical assistance from a consultant will be required to accurately estimate the cost of this work.

11.71 Replace Plumbing Fixtures – enter the number of plumbing fixtures to be replaced. This unit cost includes: removal and disposal of existing plumbing fixture, replacement of some associated piping, repair of adjacent finishes, and installation of new plumbing fixture. This category is for replacement of plumbing fixtures only. If the entire plumbing system is to be replaced please use category 11.72.

11.72 Replace Plumbing Systems– enter the square feet of building area that is to receive a new plumbing system. Typically, the entire building square footage should be inserted unless portions of the building have plumbing systems that will not be replaced. The unit cost for this category assumes that this work will occur in conjunction with a major renovation of the space and includes: removal and disposal of existing plumbing system, installation of new sanitary waste and vent piping system, installation of new domestic water piping, installation of new plumbing fixtures, and installation of a new water heater. If this work is not to occur in conjunction with a major renovation project, additional costs to protect and repair existing finishes should be added. Enter the additional lumpsum cost for this work in category 11.79. Please provide details regarding the additional cost on the *Notes-Assumptions* worksheet.

11.73 Replace Heating Systems – enter the square feet of building area that is to receive a new heating system. Typically, the entire building square footage should be inserted unless portions of the building have heating systems that will not be replaced. The unit cost for this category assumes that this work will occur in conjunction with a major renovation of the space and includes: removal and disposal of existing heating system, installation of new oil fired boiler and accessories, installation of new distribution piping, installation of new radiators, and installation of a new electrical connections. If this work is not to occur in conjunction with a major renovation project, additional costs to protect and repair existing finishes should be added. Enter the additional lumpsum cost for this work in category 11.79. Please provide details regarding the additional cost on the *Notes-Assumptions* worksheet.

11.74 Replace Ventilation Systems – enter the square feet of building area that is to receive a new ventilation system. Typically, the entire building square footage should be inserted unless portions of the building have ventilation systems that will not be replaced. The unit cost for this category assumes that this work will occur in conjunction with a major renovation of the space and includes: removal and disposal of existing ventilation system, installation of new air handling units and exhaust fans, installation of new ductwork, and installation of a new electrical connections. If this work is not to occur in conjunction with a major renovation project, additional costs to protect and repair existing finishes should be added. Enter the additional lumpsum cost for this work in category 11.79. Please provide details regarding the additional cost on the *Notes-Assumptions* worksheet.

11.75 New Exhaust Fan – enter the number of new exhaust fans. This unit cost includes: demolition and disposal of finishes to provide access for new system, installation of new 1500 CFM exhaust fan, installation of new ductwork, installation of new exterior venting, repair of existing finishes, and installation of a new electrical connections.

11.76 New Cooling Systems – enter the square feet of building area that is to receive a new cooling system. Typically, the entire building square footage should be inserted unless portions of the building will not be served by the cooling system. This unit cost includes: removal and disposal of existing cooling system, installation of new air handling units and exhaust fans, installation of new ductwork, and installation of a new electrical connections. This unit cost assumes that an adequate ventilation system is available for the distribution of cool air through out the building. If a ventilation system is not available, refer to category 11.74 *Replace Ventilation Systems*.

11.77 New Controls – enter the square feet of building area that is to receive new controls. This unit cost includes: removal and disposal of existing controls, installation of new thermostats, and installation of new DDC controls.

11.78 New Sprinkler System – enter the square feet of building area that is to be fire sprinkled. Please note that some building types may require sprinklers in attic spaces and large exterior canopy areas, so it is not uncommon for the square feet of sprinkled area to exceed the actual square feet of building area. This unit cost includes: installation of a new fire water service, demolition and replacement of ceiling finishes, and installation of a new wet pipe fire sprinkler system. Please place an adder in category 11.79 for a dry pipe sprinkler system. A consultant may be required to determine the additive cost of a dry pipe over a wet pipe sprinkler system.

11.79 Other Repair/Replacement – enter a lumpsum amount for *Other Repairs/Replacement*. The lumpsum cost should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 14.00 will convert the lumpsum cost to an appropriate regional cost. Please provide additional information regarding the other work on the *Notes-Assumptions* worksheet.

11.81 Replace Main Supply and Distribution – enter the number of lots of main electrical supply and distribution to be replaced. Each lot includes the following work: removal and disposal of seven existing electrical panels, installation of a new 1200 amp MDP, installation of a new 1200 amp disconnect switch, installation of two 225 amp subpanels, installation of four new 100 amp subpanels, and installation new wiring between panels. Please note that categories 11.82 and 11.83 are subsets of category 11.81. Therefore, an entry in category 11.81 will typically preclude entries into the other categories.

11.82 Replace MDP – enter the number of main distribution panels (MDP) to be replaced. This unit cost includes: removal and disposal of existingMDPs, installation of a new 1200 amp MDP, installation of a new 1200 amp disconnect switch, installation of two 225 amp subpanels, installation of four new 100 amp subpanels, and installation new wiring to transformer.

11.83 New Power Panel – enter the number of new power panels to be installed. This unit cost includes: installation of a new 100-amp power panel and connection to existing power supply.

11.84 Replace Lighting – enter the square feet of building area to receive new lighting. This unit cost includes: removal and disposal of existing lighting and wiring, installation of new wiring, installation of new devices, and installation of a light fixtures.

11.85 Replace Power Devices – enter the square feet of building area to receive new power wiring. This unit cost includes: removal and disposal of existing power devices (outlets, etc.) and wiring, installation of new wiring, and installation of new power devices.

11.86 New Standby Power – enter the number of new standby power systems required. This unit cost includes: new above ground fuel storage tank, new tank foundation, new fuel piping to the generator, a new 125 kW generator and day tank, and a new 600 amp automatic transfer switch.

11.91 New Fire Alarm System – enter the square feet of building area to receive a new fire alarm system. Typically, the entire building square footage should be inserted unless portions of the building already have a functional fire alarm system. This unit cost includes: all work required for a complete fire alarm system.

11.92 New Computer Outlets – enter the square feet of building area to receive new computer outlets. Typically, the entire building square footage should be inserted unless portions of the building already have functional computer outlets and will not be receiving new outlets. This cost is included in the cost for additions and new construction and should not be duplicated here. This unit cost includes: installation of new conduit, installation of new computer wire, an allowance for cutting and patching, and installation of new data outlets.

11.93 New Telephone/Public Address/Intercom System – enter the square feet of building area to receive a new telephone/intercom/public address system (a synchronized clock system is included with the public address system).

Typically, the entire building square footage should be inserted unless portions of the building already have a functional telephone/intercom/public address system and will not be receiving any new work. This unit cost includes: all work required for a complete telephone/intercom/public address system.

11.94 New Public Address – enter the number of a new gym and stage public address systems required. This unit cost includes: all work required for a complete gym and stage public address system.

11.95 New MATV System – enter the square feet of building area to receive a new MATV system. Typically, the entire building square footage should be inserted unless portions of the building already have a functional MATV system and will not be receiving any new work. This unit cost includes: all work required for a complete MATV system excluding the video monitors.

11.96 New Hearing Impaired Audio System– enter the number of a hearing impaired audio systems required. This unit cost includes: all work required for a complete hearing-impaired audio system.

11.97 New Security System – enter the square feet of building area to receive a new security system. Typically, the entire building square footage should be inserted unless portions of the building already have a functional security system and will not be receiving any new work. This unit cost includes: all work required for a complete security system.

11.98 Other Repairs/Replacement – enter a lumpsum amount for *Other Repairs/Replacement*. The lumpsum cost should be calculated as if the work were to be performed in Anchorage. The geographic factor applied on worksheet 14.00 will convert the lumpsum cost to an appropriate regional cost. Please provide additional information regarding the other work on the *Notes-Assumptions* worksheet.

**Worksheet - 12.00**

The next worksheet is titled 12.00. This worksheet addresses the costs associated with the removal of hazardous materials. The unit costs for categories 12.01 through 12.08 are to be used in conjunction with the work assembly costs in category 11.00 when the demolition will require removal of hazardous materials. Categories 12.09 through 12.11 provide stand-alone unit costs for a complete work assembly. Below is a brief summary of the unit costs included on worksheet 12.00:

## Renovation Projects

12.01 Complete Renovation – enter the square feet of building area to be completely gutted. This unit cost includes: removal of asbestos containing wall board, roofing, vinyl flooring, ceiling tiles, pipe insulation, and wall covering adhesives; removal of doors with lead paint; removal of PCBs from light fixture ballasts. Please note that categories 12.02 through 12.08 are subsets of category 12.01. If a major renovation is planned and asbestos containing materials are anticipated to be encountered during demolition, use category 12.01 and disregard categories 12.02 through 12.08.

12.02 Roof Replacement – enter the square feet of asbestos containing roofing to be removed. This unit cost includes: removal of asbestos containing roofing.

12.03 Exterior Upgrade – enter the number of exterior doors with lead paint to be removed. This unit cost includes: removal of exterior doors with lead paint.

12.04 Replace Interiors – enter the square feet of building area that is to receive new finishes. This unit cost includes: removal of asbestos containing vinyl flooring, ceiling tiles, and wall covering adhesives.

12.05 Replace Plumbing Fixtures – enter the number of plumbing fixtures to be replaced. This unit cost includes: removal of asbestos containing pipe insulation from domestic water piping. Please note that it may be possible to replace plumbing fixtures without significantly disturbing existing piping.

12.06 Replace Heating and Ventilation Systems – enter the square feet of building area that is to receive heating and ventilation system upgrades. This unit cost includes: removal of asbestos containing ceiling tiles and pipe insulation from radiant heat piping.

12.07 New Sprinkler System – enter the square feet of building area that is to receive a new fire sprinkler system. This unit cost includes: removal of asbestos containing ceiling tiles.

12.08 Work in Connection with New Electrical Installations – enter the square feet of building area that is to receive new electrical work. Typically, the entire building square footage should be inserted unless distinct portions of the building (for example, a detached wing) will not be receiving any new work. This unit cost includes: removal of asbestos containing wallboard and ceiling tiles.

12.09 Replace Small Fuel Oil Tank (Below Ground) – enter the gallon capacity of the new underground fuel tank that is to replace an existing underground fuel tank.

This unit cost includes: draining of existing tank, excavation of existing tank, removal of existing piping, soils testing for contamination, disposal of existing tank, installation of new underground fuel tank and leak detection system in existing pit, installation of new piping, and backfill of existing pit. Please note that remediation of contaminated soil is excluded from this cost. Use category 12.11 for costs associated with the remediation of contaminated soil.

12.10 Replace Bulk Fuel Oil Tank (Above Ground) – enter the gallon capacity of the new aboveground fuel tank that is to replace an existing aboveground fuel tank. This unit cost includes: draining of existing tank, removal of existing piping, disposal of existing tank, installation of new aboveground fuel tank and containment system, and installation of new piping. Please note that remediation of contaminated soil is excluded from this cost. Use category 12.11 for costs associated with the remediation of contaminated soil.

12.11 Soil Remediation – enter the cubic yards of soil that requires remediation. This unit cost includes: soil testing, excavation of contaminated soils, treatment of contaminated soils, disposal of contaminated soils, and replacement of excavated soil with non-frost susceptible fill.

**Worksheet - 13.00**

The next worksheet is titled 13.00. This worksheet calculates the overhead and profit charges for a general contractor's services. This cost is set at 20% of the direct construction cost. This is 5% more than the similar charge on a new construction project. The extra 5% is to allow for additional coordination efforts typical of renovation projects. No entries are required on this worksheet.

**Worksheet - 14.00**

The next worksheet is titled 14.00. This worksheet calculates the additional cost for construction based on the project location. The unit costs in the Cost Model are all based on the cost of material and labor in Anchorage. Therefore, to accurately reflect construction costs in other regions of the state, a geographic factor is applied to the construction costs to adjust them to reflect the actual cost of construction in the project's locale. This factor is intended to cover expenses such as shipping, subsistence, travel, et cetera.

The regional geographic factors can be found in *Table No. 1 Geographic Area Cost Factor*. Table No. 1 has been expanded so that now the geographic factors are listed

alphabetically by school district, with some districts having multiple factors. There are two values to the right of the district name: the Index and the Percentage. Insert the appropriate percentage for the school district into the red text cell for category 14.01. The spreadsheet will automatically calculate the additional, or reduced in a few regions, construction cost due to the geographic location of the project.

**Worksheet - 15.00**

The next worksheet is titled 15.00. This worksheet calculates the contingencies for the project. Two contingencies are addressed: a general design contingency and an escalation contingency.

The general design contingency is to provide design flexibility and to account for construction unknowns. The general design contingency is fixed at 15% of the subtotal of costs calculated on worksheets 1.00 through 7.00. This is 5% more than the similar contingency on a new construction project. The extra 5% is to allow for additional unknowns typical of renovation projects. No entries are required to determine the general design contingency.

The escalation contingency is to account for the increase in construction costs from October 1998 to the year that the project is anticipated to be constructed. The escalation rate is automatically calculated based on the anticipated construction date that is to be entered in the red text cell for category 15.03.

**Worksheet - 16.00**

The next worksheet is titled 16.00. This worksheet calculates *Other Project Costs* that are associated with the construction of a new school or addition. This worksheet also provides the total project cost. Below is a brief summary of the costs included on worksheet 16.00:

> 16.01 Construction Management – enter the percent of construction cost required for *Construction Management*. Qualified district and municipal personnel can manage the construction project or a private contractor can be hired or both. The Department of Education's suggested range for the cost of in-house construction management is 2 – 5% of the construction cost. The construction management cost shall not exceed a total of 5% of the construction cost if both in-house personnel and private contractors are utilized. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage. Also note that AS 14.11.020 (c) places limits on the cost of construction management furnished by a private contractor.

AS 14.11.020

(c) The construction management costs of a project assumed under this section may not exceed four percent of the amount of appropriations for the facility if the amount of appropriations is $500,000 or less. The construction management costs of a project assumed under this section may not exceed three percent of the amount of appropriations for the facility if the amount of appropriations is over $500,000 but less than $5,000,000. The construction management costs of a project assumed under this section may not exceed two percent of the amount of appropriations for the facility if the amount of appropriations is $5,000,000 or more. For purposes of this subsection "construction management" means management of the project's schedule, quality, and budget during any phase of the planning, design, and construction of the facility by a private contractor engaged by the municipality or regional educational attendance area.

16.02 Indirect Costs (Administration) – enter the percent of construction cost required for *Indirect Costs (Administration)*. Indirect costs include but are not limited to the school district's cost of facilitating the entire project, accounting costs, and Department of Education overhead costs. Typically, large projects require smaller indirect cost percentages. The Department of Education's suggested range for the cost of project administration is 2 – 5% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

16.03 Design Costs – enter the percent of construction cost required for *Design Costs*. Design costs include but are not limited to the cost associated with the project planning (from educational specifications through design development), preparation of construction/bid documents, and overseeing the completion of the work. The percent of construction for design costs on Renovation projects is usually a bit higher than that required for New Construction projects. This is due to additional services required for investigation and documentation of the existing facility. Typically, large projects require smaller design cost percentages. The Department of Education's suggested range for the cost of project design is 6 – 8% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

16.05 Project Contingency for Changes – calculates the *Project Contingency for Changes* for the entire project. The project contingency is fixed at 5% of the subtotal shown in category 16.04 so no entries are required to generate the cost.

This contingency is to cover the possibility of above average design, management, or administration costs as well as construction cost overruns. The project contingency is in addition to the 15% general contingency that was applied in worksheet 15.00.

16.07 Land Purchase Costs – enter the lumpsum amount for *Land Purchase Costs*. Even if the site has already been purchased it is wise to include the acquisition cost, especially if state reimbursement or funding is to be sought. Please note that 4 AAC 31.025 defines the requirements for reimbursement of site acquisition costs. More information regarding school site selection is available in the Department of Education publication, Site Selection Criteria and Evaluation Handbook

16.08 Site Investigation – enter the lumpsum amount for *Site Investigation*. Site investigation costs include but are not limited to cost associated with selecting a site, site surveys and soils engineering services.

16.09 Furnishings & Equipment Costs – enter the percent of construction cost required for *Furnishings & Equipment Costs*. Please refer to the Department of Education publication, Guidelines for School Equipment Purchases for information regarding the definition of equipment. Budget parameters for equipment costs on a per student basis are also established in the publication. The Department of Education's suggested range for the cost of furnishings and equipment is 0 – 7% of the construction cost. If costs are expected to exceed the department's recommended percentages, please provide a detailed justification of the overage.

16.10 Technology – enter the lumpsum amount required for *Technology*. Please refer to the Department of Education publication, Guidelines for School Equipment Purchases for information regarding the definition of technology. Budget parameters for technology costs on a per student basis are also established in the publication. If technology costs are expected to exceed the cost parameters identified in the publication, please provide an itemized estimate of the technology costs and justification for the increase based on the instructional program to be delivered.

16.11 Art (Where Applicable) – enter the percent of construction cost required for *Art*. The Department of Education applies the provisions of AS 35.27.020 to establish the required percent for art in school projects. This requirement is being applied by the department to all School Construction projects and some Major Maintenance projects based on the scope of the project. The minimum requirement for rural school facilities is 1/2% of construction cost. The minimum requirement for all other school facilities is 1% of construction cost.

16.12 Project Total Cost– provides the estimated *Project Total Cost* for renovation work.

Worksheets 11.00 – 16.00 comprise the Renovation module of the Program Demand Cost Model for Alaskan Schools – 8th Edition. Please refer to the Samples section for an examples of the *Grand Summary*, *General Summary*, and *Notes –Assumptions* worksheets.

# Completion of the Cost Model Estimate

### General Summary

The *General Summary* worksheet provides a consolidated summary of all the identified project costs. Please refer to the Samples section for an example of the *General Summary* worksheet. No entries are required on this worksheet because all the cost information is pulled from the previous worksheets. This worksheet serves as the project estimate while the other worksheets serve as project estimate back up. Please note that this worksheet provides an estimate structure and unit costs that enables the manual creation of a project estimate should a computer be unavailable. Refer to the Samples section for an example of the *General Summary* worksheet.

### Notes – Assumptions

The *Notes –Assumptions* worksheet provides a location for detailed information regarding assumptions made while preparing the cost estimate. Each entry on the worksheet should include the line item (category number) and estimate summary page number defining the location in the estimate where the cost assumption has been placed. Each entry should also include a detailed description of the cost assumption including the dollar value associated with the assumption. Please refer to the Samples section for an example of the *Notes –Assumptions* worksheet.

### Saving & Printing

As mentioned earlier, the file should be saved as an xls extension with a descriptive title for easy reference. It is recommended that the file be saved periodically through out the creation of the estimate. When the estimate is complete, all worksheets should be printed. The *Grand Summary* and *General Summary* worksheets serve as broad and detailed estimate summaries, respectively. The *Notes –Assumptions* worksheet serves as a description of assumptions that were made during the creation of the estimate. The remainder of the worksheets serve as estimate back up.

# Samples

**Sample Estimate**

The following pages contain a sample of the *Grand Summary*, the *General Summary –New School and Addition*, the *General Summary –Renovation* , and the *Notes –Assumptions* worksheets from the Combined New Work – Renovation Work Demand Model file. Estimates prepared for the Department of Education that utilize the Program Demand Cost Model for Alaskan Schools – 8th Edition shall provide the *Grand Summary*, the *General Summary*, and the *Notes –Assumptions* worksheets.

Sample

## Grand Summary

SCHOOL DISTRICT: (Name of School District)

DATE OF ESTIMATE: (Date)

PROJECT: (Name of School)

LOCATION: (Location of School)

**GRAND SUMMARY**

| | GROSS FLOOR AREA | CONSTRUCTION COSTS | PROJECT TOTAL COSTS |
|---|---|---|---|
| New School or Additions | 0 SF | $ 0 | $ 0 |
| Renovation Work | 0 SF[1] | $ 0 | $ 0 |
| **TOTAL NEW SCHOOL OR ADDITIONS AND RENOVATION WORK:** | | **$ 0** | **$ 0** |

**NOTES:**

[1] The square foot area for renovation needs to be inserted.

Sample

# General Summary – New School or Addition

SCHOOL DISTRICT: (Name of School District) DATE OF ESTIMATE: (Date)

PROJECT: (Name of School)
LOCATION: (Location of School)

| CONSTRUCTION SUMMARY | Gross Floor Area | Construction Costs | Project Total Costs |
|---|---|---|---|
| New School or Additions | 0 SF | $ 0 | $ 0 |
| Renovation Work | 0 SF | 0 | 0 |
| **TOTAL NEW SCHOOL OR ADDITIONS AND RENOVATION WORK:** | | **$ 0** | **$ 0** |

**NEW SCHOOL OR ADDITIONS**

**1.00 INSTRUCTIONAL RESOURCE/SUPPORT TEACHING AREAS**

| | AREA | $/SF | COST |
|---|---|---|---|
| 1.01 Standard Classroom | 0 SF | $ 89.52 | $ 0 |
| 1.02 Kindergarten/Primary Classroom | 0 SF | 97.28 | 0 |
| 1.03 Damp Classroom/Laboratory | 0 SF | 102.79 | 0 |
| 1.04 Gymnasium | 0 SF | 121.55 | 0 |
| 1.05 Library and Media Center | 0 SF | 93.81 | 0 |
| 1.06 Music Room | 0 SF | 97.76 | 0 |
| 1.07 Home Economics | 0 SF | 96.42 | 0 |
| 1.08 Industrial Arts | 0 SF | 117.95 | 0 |
| 1.09 Other6 | 0 SF | 0.00 | 0 |
| 1.10 Other6 | 0 SF | 0.00 | 0 |
| 1.11 SUBTOTALS: | 0 SF | | $ 0 |

**2.00 GENERAL SUPPORT/SUPPLEMENTARY AREAS**

| | | | |
|---|---|---|---|
| 2.01 Multipurpose Room | 0 SF | $ 93.89 | $ 0 |
| 2.02 Auditorium | 0 SF | 119.80 | 0 |
| 2.03 Lockers and Showers | 0 SF | 121.00 | 0 |
| 2.04 Administration | 0 SF | 102.15 | 0 |
| 2.05 Cafeteria/Food Preparation | 0 SF | 172.67 | 0 |
| 2.06 Storage | 0 SF | 83.37 | 0 |
| 2.07 Toilets | 0 SF | 158.75 | 0 |
| 2.08 Circulation | 0 SF | 90.46 | 0 |
| 2.09 Mechanical/Electrical | 0 SF | 84.10 | 0 |
| 2.10 Other6 | 0 SF | 0.00 | 0 |
| 2.11 Other6 | 0 SF | 0.00 | 0 |
| 2.12 SUBTOTALS: | 0 SF | | $ 0 |

**NEW SCHOOL OR ADDITIONS**

| | | AREA | $/SF | COST |
|---|---|---|---|---|
| **3.00** | **OPTIONAL SPECIAL REQUIREMENTS** | | | |
| 3.01 | 125 KW Electrical Generator and Day Tank | 0 LS | 85,491 | $ 0 |
| 3.02 | Fuel Oil 1,000 Gallon Storage for Generator | 0 GAL | 5.83 | 0 |
| 3.03 | Sprinkler System | 0 SF | 2.37 | 0 |
| 3.04 | Fire Protection (Pumping) | 0 EA | 18,160.00 | 0 |
| 3.05 | Water Storage or Special Supply Requirements (Technical Assistance Required) | 0 GAL | 2.24 | 0 |
| 3.06 | Other Special Requirements | 0 LS | 0 | 0 |
| 3.07 | SUBTOTAL: | | | $ 0 |
| **4.00** | **SITEWORK (TECHNICAL ASSISTANCE REQUIRED)** | | | |
| 4.01 | Demolition of Existing Building | 0 SF | 5.50 | $ 0 |
| 4.02 | Site Preparation (Estimate) | 1 LS | 0 | 0 |
| 4.03 | Site Improvements (Estimate) | 1 LS | 0 | 0 |
| 4.04 | Playground Equipment/Sports Equipment (Est.) | 1 LS | 0 | 0 |
| 4.05 | Utilities (Estimate) | 1 LS | 0 | 0 |
| 4.06 | Bulk Fuel Storage | 0 GAL | 0.00 | 0 |
| 4.07 | Site Lighting (Estimate) | 1 LS | 0 | 0 |
| 4.08 | Special Circumstances Additional Costs (Est.) | 1 LS | 0 | 0 |
| 4.09 | TOTAL BUILDING COSTS: | | | $ 0 |
| **5.00** | **CONSTRUCTION GENERAL REQUIREMENTS** | | | |
| 5.01 | Mobilization, General Operating Costs and Contractor's Profit | | 15.00% | 0 |
| 5.02 | BASE TOTAL: | | | $ 0 |
| **6.00** | **GEOGRAPHIC AREA COST FACTOR** | | | |
| 6.01 | Geographic Area Cost Factor | | 0.00% | 0 |
| 6.02 | SUBTOTAL: | | | $ 0 |
| **7.00** | **SIZE FACTOR** | | | |
| 7.01 | Size Adjustment Factor | | | 0 |
| 7.02 | SUBTOTAL: | | | $ 0 |

**NEW SCHOOL OR ADDITIONS**

**8.00 CONTINGENCIES**

| | | | | |
|---|---|---|---|---|
| 8.01 | GENERAL: For construction unknowns and the unanticipated, on site and design criteria. | | 10.00% | 0 |
| 8.02 | SUBTOTAL: | | | 0 |
| 8.03 | ESCALATION: Allowance for escalation from Fall 1998 to . . . | 2000 | 4.90% | 0 |
| 8.04 | TOTAL ESTIMATED CONSTRUCTION VALUE: | | | $ 0 |

**9.00 PROJECT OVERHEAD AND OTHER COSTS**

| | | | | |
|---|---|---|---|---|
| 9.01 | Construction Management | | 0.00% | 0 |
| 9.02 | Indirect Costs (Administration) | | 0.00% | 0 |
| 9.03 | Design Costs | | 0.00% | 0 |
| 9.04 | SUBTOTAL ONE: | | | 0 |
| 9.05 | Project Contingency for Changes | | 5.00% | 0 |
| 9.06 | SUBTOTAL TWO: | | | 0 |
| 9.07 | Land Purchase Costs (Estimate) | 1 LS | | 0 |
| 9.08 | Site Investigation (Estimate) | | | 0 |
| 9.09 | Furnishings & Equipment Costs | | 0.00% | 0 |
| 9.10 | Technology (Estimate) | 1 LS | | 0 |
| 9.11 | Art (Where Applicable) | | 0.00% | 0 |
| **9.12** | **PROJECT TOTAL COST:** | | | **$ 0** |

Sample

# General Summary – Renovation

**RENOVATION WORK**

| 11.00 REMODEL | AREA | $/SF | COST |
|---|---|---|---|
| 11.01 FOUNDATION AND SUBSTRUCTURE | | | |
| 11.02 Repairs (Estimate) | 1 LS | 0.00 | 0 |
| 11.10 SUPERSTRUCTURE | | | |
| 11.11 Repairs (Estimate) | 1 LS | 0.00 | 0 |
| 11.20 EXTERIOR CLOSURE | | | |
| 11.21 Exterior Upgrades (Replace Ext. Beveled Siding) | 0 SF | 6.35 | 0 |
| 11.22 Exterior Upgrades (Repaint Existing) | 0 SF | 1.56 | 0 |
| 11.23 Exterior Insulation Finish System to Existing | 0 SF | 9.50 | 0 |
| 11.24 Exterior Upgrades (Cement Board/Painted) | 0 SF | 3.97 | 0 |
| 11.25 Exterior Skin (Metal Siding) | 0 SF | 7.36 | 0 |
| 11.26 Insulation (Replace Insulation and Gypboard) | 0 SF | 3.82 | 0 |
| 11.27 Exterior Closure (Replace Doors and Frames) | 0 EA | 1,400.31 | 0 |
| 11.28 Exterior Closure (Replace Windows) | 0 SF | 54.79 | 0 |
| 11.29 Other Repairs (Estimate) | 1 LS | 0.00 | 0 |
| 11.30 ROOFING | | | |
| 11.31 Replace Metal Roofing | 0 SF | 7.88 | 0 |
| 11.32 Replace Membrane Roof | 0 SF | 8.52 | 0 |
| 11.40 INTERIOR CONSTRUCTION | | | |
| 11.41 Replace Partitions (Includes Finishes) | 0 SF | 9.23 | 0 |
| 11.42 Replace Doors and Frames | 0 EA | 1,195.52 | 0 |
| 11.43 Interior Painting (Walls and Ceilings) | 0 SF | 1.98 | 0 |
| 11.44 Replace Carpeting | 0 SF | 5.03 | 0 |
| 11.45 Replace Resilient Flooring | 0 SF | 3.68 | 0 |
| 11.46 Replace Gym Flooring | 0 SF | 9.33 | 0 |
| 11.47 Replace Ceramic Tile | 0 SF | 10.69 | 0 |
| 11.48 Replace Acoustical Tile Ceiling | 0 SF | 2.53 | 0 |
| 11.49 Replace Gypboard Ceiling | 0 SF | 3.40 | 0 |
| 11.50 SPECIALTIES/FURNISHINGS AND EQUIPMENT | | | |
| 11.51 Replace Toilet Partitions | 0 EA | 1,057.46 | 0 |
| 11.52 Replace Toilet Accessories | 0 EA | 117.87 | 0 |
| 11.53 Replace Sports Equipment and Lockers | 0 LS | 14,409.00 | 0 |
| 11.54 Replace Tack/Chalk/Marker Boards | 0 SF | 4.21 | 0 |
| 11.55 Replace Base Cabinet Units | 0 LF | 195.25 | 0 |
| 11.56 Replace Wall Hung Units | 0 LF | 126.48 | 0 |
| 11.57 Other Repairs (Estimate) | 1 LS | 0.00 | 0 |
| 11.60 CONVEYING (Elevators, Etc.) | | | |
| 11.61 Repairs/Replacement (Estimate) | 1 LS | 0.00 | 0 |

**RENOVATION WORK**

| | | AREA | $/SF | COST |
|---|---|---|---|---|
| **11.00** | **REMODEL** | | | |
| 11.70 | MECHANICAL | | | |
| 11.71 | Replace Plumbing Fixtures | 0 EA | 1,273.07 | 0 |
| 11.72 | Replace Plumbing Systems | 0 SF | 4.15 | 0 |
| 11.73 | Replace Heating Systems | 0 SF | 6.23 | 0 |
| 11.74 | Replace Ventilation Systems | 0 SF | 8.87 | 0 |
| 11.75 | New Exhaust Fan | 0 EA | 5,862.00 | 0 |
| 11.76 | New Cooling Systems | 0 TON | 2,643.77 | 0 |
| 11.77 | New Controls | 0 SF | 3.71 | 0 |
| 11.78 | New Sprinkler System (Excludes Replace Ceiling) | 0 SF | 4.64 | 0 |
| 11.79 | Other Repair/Replacement (Estimate) | 1 LS | 0.00 | 0 |
| 11.80 | ELECTRICAL | | | |
| 11.81 | Replace Main Supply and Distribution | 0 LS | 34,956.00 | 0 |
| 11.82 | Replace MDP | 0 LS | 14,905.00 | 0 |
| 11.83 | New Power Panel | 0 EA | 3,375.00 | 0 |
| 11.84 | Replace Lighting | 0 SF | 5.93 | 0 |
| 11.85 | Replace Power Devices | 0 SF | 1.36 | 0 |
| 11.86 | New Standby Power (125 KW) and Fuel Oil | 0 EA | 91,321.00 | 0 |
| 11.90 | COMMUNICATIONS | | | |
| 11.91 | New Fire Alarm System | 0 SF | 0.76 | 0 |
| 11.92 | New Computer Outlets (Rough-In) | 0 SF | 0.44 | 0 |
| 11.93 | New Telephone/Public Address/Intercom System | 0 SF | 1.52 | 0 |
| 11.94 | New Public Address (Gym and Stage) | 0 LS | 29,879.00 | 0 |
| 11.95 | New MATV System | 0 SF | 0.44 | 0 |
| 11.96 | New Hearing Impaired Audio System | 0 LS | 6,937.00 | 0 |
| 11.97 | New Security System | 0 SF | 0.56 | 0 |
| 11.98 | Other Repairs/Replacement (Estimate) | 1 LS | 0.00 | 0 |
| 11.100 | SUBTOTAL | | | $ 0 |

**12.00 ADDITIONAL COSTS FOR HAZARDOUS MATERIALS REMOVAL (OPTIONS) (SUPPLEMENT TO SECTION 11.00)**

| | | | | |
|---|---|---|---|---|
| 12.01 | Complete Renovation (Interior) | 0 SF | $ 18.91 | $ 0 |
| 12.02 | Roof Replacement (Roof Area) | 0 SF | 3.28 | 0 |
| 12.03 | Exterior Upgrade (Number of Doors) | 0 EA | 430.06 | 0 |
| 12.04 | Replace Interiors | 0 SF | 6.83 | 0 |
| 12.05 | Replace Plumbing Fixtures | 0 EA | 404.25 | 0 |
| 12.06 | Replace Heating and Ventilation Systems | 0 SF | 2.80 | 0 |
| 12.07 | New Sprinkler System | 0 SF | 2.58 | 0 |
| 12.08 | Work in Connection with New Electrical Installations | 0 SF | 0.62 | 0 |

**RENOVATION WORK**

**12.00 ADDITIONAL COSTS FOR HAZARDOUS MATERIALS REMOVAL (OPTIONS) (SUPPLEMENT TO SECTION 11.00) (Continued)**

| | | | | |
|---|---|---|---|---|
| 12.09 | Replace Small Fuel Oil Tank (Below Ground) | 0 GAL | 8.97 | 0 |
| 12.10 | Replace Bulk Fuel Oil Tank (Above Ground) | 0 GAL | 0.00 | 0 |
| 12.11 | Soil Remediation | 0 CY | 164.55 | 0 |
| 12.12 | Other Specific Abatement | 1 LS | 0.00 | 0 |
| 12.13 | SUBTOTAL: | | | $ 0 |

**13.00 CONSTRUCTION GENERAL REQUIREMENTS**

| | | | |
|---|---|---|---|
| 13.01 | Mobilization, General Operating Costs and Contractor's Profit | 20.00% | 0 |
| 13.02 | BASE TOTAL: | | $ 0 |

**14.00 GEOGRAPHIC AREA COST FACTOR**

| | | | |
|---|---|---|---|
| 14.01 | Geographic Area Cost Factor | 0.00% | 0 |
| 14.02 | SUBTOTAL: | | $ 0 |

**15.00 CONTINGENCIES**

| | | | |
|---|---|---|---|
| 15.01 | GENERAL: For construction unknowns and the unanticipated, on site and design criteria | 15.00% | 0 |
| 15.02 | SUBTOTAL: | | 0 |
| 15.03 | ESCALATION: Allowance for escalation from Fall 1998 (Cost Model price basis) to . . . 2000 | 4.90% | 0 |
| 15.04 | TOTAL ESTIMATED CONSTRUCTION VALUE: | | $ 0 |

**RENOVATION WORK**

**16.00 PROJECT OVERHEAD AND OTHER COSTS**

| | | | | |
|---|---|---|---|---|
| 16.01 | Construction Management | | 0.00% | 0 |
| 16.02 | Indirect Costs (Administration) | | 0.00% | 0 |
| 16.03 | Design Costs | | 0.00% | 0 |
| 16.04 | SUBTOTAL ONE: | | | 0 |
| 16.05 | Project Contingency for Changes | | 5.00% | 0 |
| 16.06 | SUBTOTAL TWO: | | | 0 |
| 16.07 | Land Purchase Costs (Estimate) | 1 LS | | 0 |
| 16.08 | Site Investigation (Estimate) | | | 0 |
| 16.09 | Furnishings & Equipment Costs | | 0.00% | 0 |
| 16.10 | Technology (Estimate) | 1 LS | | 0 |
| 16.11 | Art (Where Applicable) | | 0.00% | 0 |
| **16.12** | **PROJECT TOTAL COST:** | | | **$ 0** |

Sample

# Notes & Assumptions

SCHOOL DISTRICT: (Name of School District) DATE OF ESTIMATE: (Date)

PROJECT: (Name of School)
LOCATION: (Location of School)

**NOTES AND ASSUMPTIONS**

| Page No. | Line Item | |
|---|---|---|
| 0. | 0.00 | |

# Tables

Table No. 1 – Geographic Area Cost Factor

Table No. 2 – Size Adjustment Chart

Table No. 3 – Alaskan Construction Escalation Index

Table No. 4 – DOE Instruction CIP Application, Appendix F

**Table No. 1**
**Geographic Area Cost Factor**
**December 1998**

| | Index | Percentage |
|---|---|---|
| Alaska Gateway | 123.90 | 23.90% |
| Aleutian Region | 149.50 | 49.50% |
| Aleutians East | 126.20 | 26.20% |
| Anchorage | 100.00 | 0.00% |
| Annette Island | 121.90 | 21.90% |
| Bering Strait | 176.50 | 76.50% |
| Bristol Bay Borough Schools | 126.20 | 26.20% |
| Chatham | 121.90 | 21.90% |
| Chugach | 107.50 | 7.50% |
| Copper River | 110.90 | 10.90% |
| Cordova | 107.50 | 7.50% |
| Craig City Schools | 111.40 | 11.40% |
| Delta/Greely | 110.90 | 10.90% |
| Denali Borough | 110.90 | 10.90% |
| Dillingham City Schools | 111.40 | 11.40% |
| Fairbanks | 105.00 | 5.00% |
| Galena | 136.80 | 36.80% |
| Haines | 111.40 | 11.40% |
| Hoonah City Schools | 121.90 | 21.90% |
| Hydaburg City Schools | 121.90 | 21.90% |
| Iditarod Area Schools | 149.50 | 49.50% |
| Juneau City/Borough Schools | 101.60 | 1.60% |
| Kake City Schools | 121.90 | 21.90% |
| Kashunamiut | 162.10 | 62.10% |

**Table No. 1**
**Geographic Area Cost Factor**
**December 1998**

| | Index | Percentage |
|---|---|---|
| Kenai Peninsula | | |
| Kenai/Soldotna | 98.60 | -1.40% |
| Homer Area | 104.50 | 4.50% |
| Ketchikan | 109.80 | 9.80% |
| Klawock City Schools | 121.90 | 21.90% |
| Kodiak Island | | |
| Kodiak | 111.40 | 11.40% |
| Village | 121.90 | 21.90% |
| Kuspuk Schools | 162.10 | 62.10% |
| Lake & Peninsula | 121.90 | 21.90% |
| Lower Kuskokwim | | |
| Bethel | 151.10 | 51.10% |
| Villages | 162.10 | 62.10% |
| Lower Yukon | 169.10 | 69.10% |
| Mat-Su Borough Schools | | |
| Palmer - Willow | 97.00 | -3.00% |
| Other Areas | 104.50 | 4.50% |
| Nenana City Schools | 107.50 | 7.50% |
| Nome City Schools | 159.70 | 59.70% |
| North Slope Borough | | |
| Barrow | 165.80 | 65.80% |
| Villages | 177.20 | 77.20% |
| Atqasuk/Pt. Lay | 194.90 | 94.90% |
| Northwest Arctic Schools | | |
| Kotzebue | 159.70 | 59.70% |
| Villages | 176.50 | 76.50% |
| Pelican City Schools | 121.90 | 21.90% |
| Petersburg City Schools | 109.80 | 9.80% |
| Pribilof Island Schools | 149.50 | 49.50% |
| Sitka City Borough | 109.80 | 9.80% |
| Skagway City Schools | 109.80 | 9.80% |
| Southeast Island Schools | 121.90 | 21.90% |

**Table No. 1**
**Geographic Area Cost Factor**
**December 1998**

| | Index | Percentage |
|---|---|---|
| Southwest Region Schools | 149.50 | 49.50% |
| St. Mary's School District | 162.10 | 62.10% |
| Tanana City Schools | 107.50 | 7.50% |
| Unalaska City Schools | 116.50 | 16.50% |
| Valdez City Schools | 104.50 | 4.50% |
| Wrangell City Schools | 109.80 | 9.80% |
| Yakutat City Schools | 111.40 | 11.40% |
| Yukon Flats | 136.80 | 36.80% |
| Yukon-Koyukuk | 149.50 | 49.50% |
| Yupiit Schools | 162.10 | 62.10% |

**Table No. 1**
**Geographic Area Cost Factor**
**(Continued)**

**NOTES**

Back-up data for this analysis is held at HMS Inc., 4103 Minnesota Drive, Anchorage, Alaska.

This is an estimate of geographic area cost factors based on averages for materials, freight and equipment costs, also current Title 36 labor rates. The cost factors are based on an institutional building in Alaska using a standard AIA contract or similar contract.

This is only a guide and not necessarily correct for any specific need. It represents only a collection of costs normally found on some construction projects, rather than the custom requirements of a particular project.

This is not an index. This is a geographic area cost factor which includes not merely cost changes and logistical consideration, but also design criteria and how it is applied in different

Such design considerations include the obvious standard concrete footings used mostly in Southcentral and Southeastern Alaska, to piling requirements in Arctic and sub-Arctic, Alaska, to the not so apparent for a local audience for landscape in Anchorage to none in rural areas.

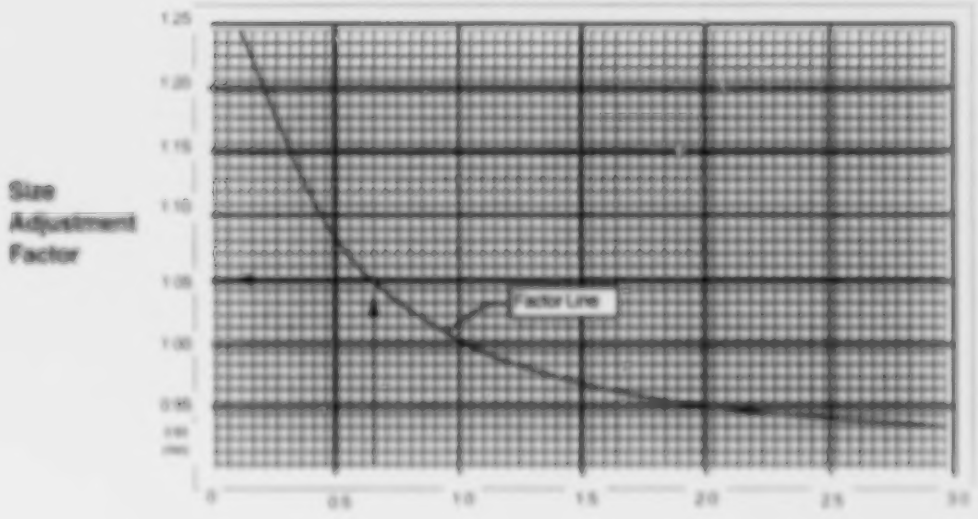
The calculations used in developing these cost factors are based on reasonable assumptions. For example, barge freight is mostly included rather than air freight for all materials and equipment. It is also assumed that local labor can be used to the fullest general availability, rather than all imported workers.

Village-to-village costs will vary plus or minus 5%. When using this geographic cost factor consider how the location for which the estimate is being prepared is different from other surrounding places.

Regional cost factors are based on calculation for anticipated conditions generally found in the area and logistic considerations. The more specific area factors are somewhat more subjective and based on opinion rather than any detailed analysis.

**Table No. 2**

**Size Adjustment Chart**




EXAMPLE: The Size Adjustment Factor is desired for a 16,000 SF Academic Facility.

Area Relationship $\frac{\text{Proposed Facility Size}}{\text{Typical Facility Size}} = \frac{16{,}000}{25{,}000} = 0.64$

Find .64 on the horizontal axis. Trace a vertical line to the factor curve and then trace a horizontal line to the vertical axis' Size Adjustment Factor which is 1.05.

Source: Military Handbook Cost Engineering Policy and Procedures – MIL-HDBK-1010A, dated August 1992

**Table No. 3**
**Alaskan Construction Escalation Index**
**Anchorage, Alaska**
**October 1998**

| Base Year 1980 | Index 100.00 | Base Year 1980 | Index 100.00 | Percentage |
|---|---|---|---|---|
| 1980 | 100.00 | 1991 | 134.30 | |
| 1981 | 104.40 | 1992 | 138.80 | |
| 1982 | 107.70 | 1993 | 143.30 | |
| 1983 | 115.60 | 1994 | 144.40 | |
| 1984 | 118.60 | 1995 | 143.40 | |
| 1985 | 117.70 | 1996 | 146.20 | |
| 1986 | 121.40 | 1997 | 146.70 | |
| 1987 | 123.00 | 1998 | 151.50 | |
| 1988 | 124.80 | 1999 | | * Estimate 2.40% |
| 1989 | 126.40 | 2000 | | * Estimate 4.90% |
| 1990 | 131.80 | 2001 | | * Estimate 7.50% |

**NOTES**

Back-up data for this analysis is held at HMS Inc., 4103 Minnesota Drive, Anchorage, Alaska.

This estimate is an index based on averages for materials, freight and equipment, also current Title 36 labor rates as of October 1998. The index is based on an institutional building in Anchorage using a standard AIA contract or similar contract.

It should be noted that while the index is a useful guide, it will not necessarily be correct for a specific need.

Remember always that an index is only a guide and not necessarily correct for any specific need. It represents only a collection of costs normally found on some construction projects, rather than the requirements of a particular project.

The prediction for 1999, 2000 and 2001 are estimates assuming more of the same moderate escalation based on recent factors.

**Table No. 4**
**Department of Education Instruction CIP Application**
**Appendix F: Type of Space Added or Improved**
**Adopted by The Bond Reimbursement & Grant Review Committee**

Category A : Instructional or Resource

Kindergarten
Elementary
General Use Classrooms
Secondary
Library/Media Center
Special Education
Bi-Cultural/Bilingual
Art
Science
Music/Drama
Journalism
Computer Lab/Technology Resource
Business Education
Home Economics
Gifted/Talented
Wood Shop
General Shop
Small Machine Repair Shop
Darkroom
Gym

Category B : Support Teaching

Counseling/Testing
Teacher Workroom
Teacher Offices
Educational Resource Storage
Time-out Room
Parent Resource Room

Category C : General Support

Student Commons/Lunch Room
Auditorium
Pool
Weight Room
Multipurpose Room
Boys Locker Room
Girls Locker Room
Administration
Nurse
Conference Rooms
Community Schools/PTA Administration
Kitchen/Food Service
Student Store

Category D : Supplementary

Corridors/Vestibules/Entryways
Stairs/Elevators
Mechanical/Electrical
Passageways/Chaseways
Supply Storage & Receiving Areas
Restrooms/Toilets
Custodial
Other Special Remote Location Factors
Other Building Support

*Form #05-95-017, Appendix F*

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